



MISSOURI CONSERVATIONIST

VOLUME 81, ISSUE 11, NOVEMBER 2020
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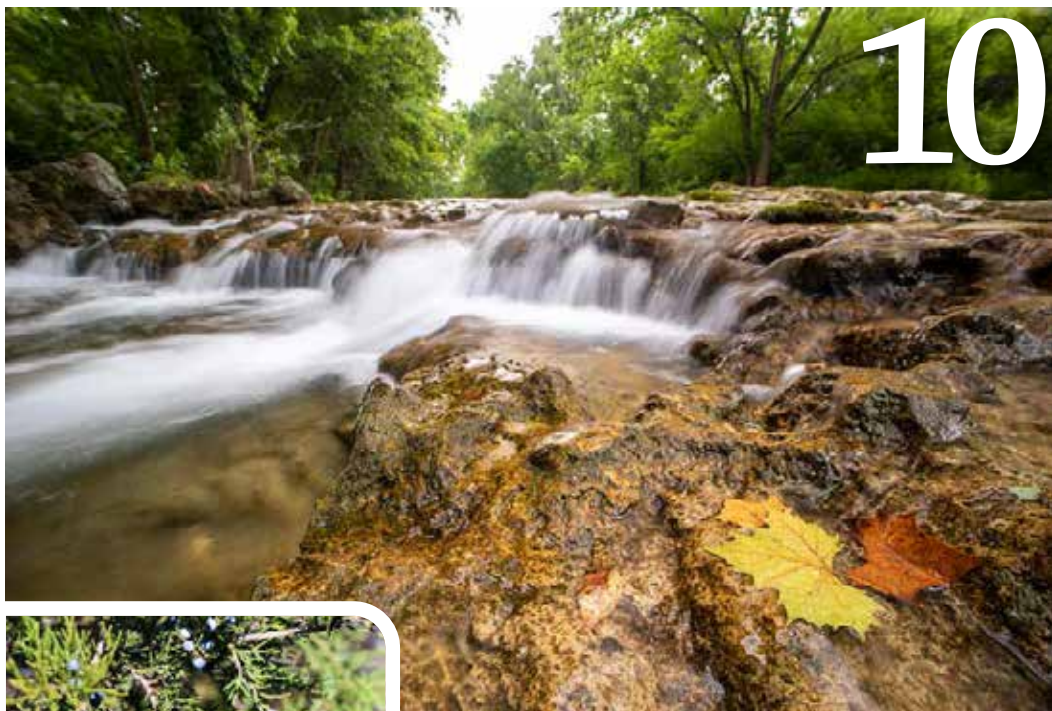
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Pecans

MISSOURI
CONSERVATIONIST



ON THE COVER

Fall color in
southeast Missouri

DAVID STONNER

24mm lens, f/4
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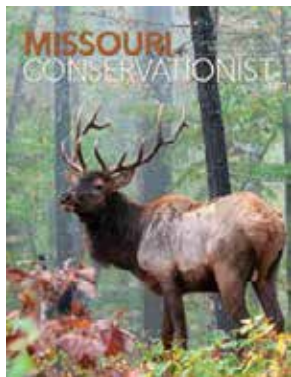
Inbox



Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email Magazine@mdc.mo.gov or write to us:

MISSOURI
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SEPTEMBER ISSUE
What a great issue this month! I've subscribed for many years, and am always pleased with the content. This month you outdid yourselves. Well done and thank you.

Chuck Moylan
Lake Lotawana

ELK

The elk hunting story in the September issue was very inspiring [*History Calling*, Page 22]. When I was little, one of my uncles had a copy of *Wild Mammals of Missouri*. The saddest part of the book for me was the mammals that were no longer here — bison, mountain lion, elk, and gray wolves. Now, we have a scattered population of mountain lion, a semi-wild population of bison at Prairie State Park, and a population of elk that can be hunted. I have hoped and dreamed of this all my life!

Gale Roberts via email

After receiving my September issue, I feel compelled to write for the first time in my 67 years. I must commend and congratulate your staff for the critical and enormously important work you do. Your monthly magazine gives us a constant reminder of the beauty of all creation, which never changes and helps sustain us during these difficult times. Thank you for everything you do and please never stop doing it.

David Dunavant Chesterfield

I saw and thought, oh nice elk on the cover of my *Montana Outdoor* magazine. Wait a minute — that's the *Missouri Conservationist*! I have kept a subscription to the *Conservationist* since I left my home state in 1990. As I grew up in Missouri, I developed a great passion for hunting deer and turkey to a degree I decided to move west to expand my hunting opportunities. Keeping my subscription to the *Conservationist* has kept me connected to my birth state since I resettled in western Montana. I see elk every week in my daily travels, and I hunt them by bow and rifle, seldom traveling further than 15 miles from my home. Your September cover of the young six-point elk proudly standing atop a hardwood Missouri Ozark hill made

me proud of my home state of Missouri and the Missouri Department of Conservation's efforts to restore the majestic wapiti. What a fantastic sight! Makes me a little homesick, too.

John Benda Superior, Montana

SEEDLINGS

I have been reading the *Missouri Conservationist* since I was a teenager. It was always on our footstool in the living room and my father read it cover to cover. He was a big outdoorsman. That was in the 1960s. I have subscribed to this magazine ever since, and I always enjoy reading it. This edition's seedling descriptions were so valuable [September, *Seedling Order Form* special insert]. As I was reading it, I remember many of the trees featured that my mother planted in our yard. I will keep this magazine in my library for identification of trees and shrubs. Thank you for a great and informative publication.

Susan L. Robinson Lee's Summit

I love your magazine and eagerly look forward to getting it every month. I like how you have photos of beneficial insects. I've destroyed some "good bugs" just because they were so awful looking. Also thank you for selling seedlings at such affordable prices. I've planted so many, and some are fair-sized trees now.

Vera Brubacker Latham

LIFETIME INFLUENCER

The *Missouri Conservationist* has been such an informative and enjoyable magazine in our home. We celebrated our 68th wedding anniversary this year, and the *Conservationist* had an important influence on our two sons. They both grew up fishing and hunting — and one became a Missouri Conservation agent! You never know what can play an important part in a life.

Stan and Judy Burger Carl Junction

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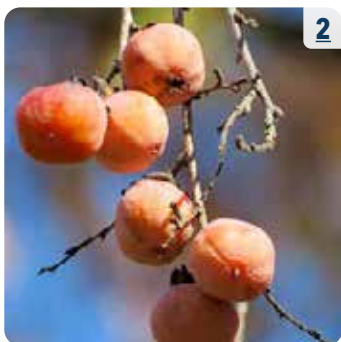
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1 | Millstream
Gardens
Conservation
Area by **Diana
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LLOYD GROTJAN OF FULL SPECTRUM PHOTO



Up Front

with Sara Parker Pauley

✱ This past month the department held its annual Missouri Conservation Partners Roundtable, but the first in a virtual format. We were concerned about the effects of these important face-to-face conversations with key partners transitioning to computer screens and imperfect technology, yet were elated when over 680 partners and organizations registered for the event.

One highlight was our keynote speaker, Simon Roosevelt, the great, great grandson of President Teddy Roosevelt, and a national conservation leader in his own right. His virtual presentation was delivered in front of a grand fireplace — one I could envision Teddy sitting in front of with colleagues discussing the future of conservation in our nation.

Simon's words were rich. He noted current challenges are many, but what is needed in our deeply divided country is unity of purpose, much like when President Roosevelt brought together divergent leaders to discuss, debate, and design the conservation legacy that survives to this day. He noted Missouri's own conservation history was founded and funded largely by our diverse citizenry. He believed if unity could happen, it would happen here.

I thought of this as I listened to our virtual roundtable sessions — to rich conversations among our diverse partners, all considering current challenges and discussing possible paths forward. I, too, was filled with hope that if unity were possible, it was possible here.

I'm certain Simon's great, great grandfather Teddy was looking down from above, perhaps sitting in front of a grand fireplace, confident in the possibilities ahead.

Sara Parker Pauley

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Nature LAB

by Bonnie Chasteen

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

WILDLIFE DISEASE MANAGEMENT

White-Tailed Deer Study

✳ If you hunt deer in Missouri, you know that chronic wasting disease (CWD) threatens our state's wild deer and elk herds. It spreads easily and always kills the deer and elk it infects. CWD was first found in Missouri's wild deer herd in 2012. Since then, it has spread from the north-central part of the state to many other locations inside Missouri.

"Initially, MDC designated a CWD Management Zone that included counties within 25 miles of a CWD-positive detection," said MDC Private Lands Deer Biologist Kevyn Wiskirchen. "This designation was based on data from other Midwestern states that indicated white-tailed deer commonly disperse up to 25 miles." Wiskirchen added that deer usually disperse in the first 18 months of life, and they can carry the disease with them if infected.

In 2015, MDC and the University of Missouri initiated a white-tailed deer survival, recruitment, and movement study to determine how far Missouri whitetails disperse.



Former University of Missouri employees Billy Dooling and Summer Higdon release a radio-collared doe fawn.

Five-year effort led to CWD Management Zone changes and more efficient disease surveillance and management

Over five years, researchers captured male and female deer during late winter and fitted them with GPS radio-collars. This allowed researchers to track their movements.

An analysis of movement data indicated that over 90 percent of deer in the study dispersed less than 10 miles. Based on this new information, MDC reconstructed its CWD Management Zone to include counties within 10 miles of a CWD-positive detection, down from 25 miles.

"This change has allowed a more targeted approach to CWD surveillance in Missouri, enabling MDC staff to more efficiently and effectively allocate resources in its efforts to ensure the health of Missouri's deer herd," Wiskirchen said.

White-Tailed Deer Study at a Glance

Methods

- White-tailed deer capture
- Radio collaring and monitoring
- Data collection and mapping

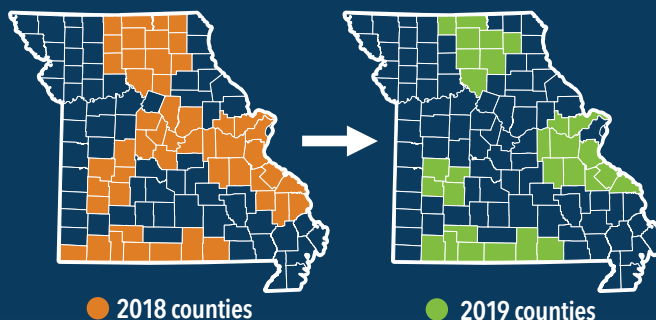
Preliminary Results

- More than 93% of collared deer dispersed less than 10 miles
- Average female dispersal was 3.6 miles
- Average male dispersal was 4.9 miles

Research Partners: University of Missouri, University of Montana, Missouri landowners

CWD Management Zone Changes

Study helped MDC reduce size of CWD Management Zone size to improve disease surveillance efficiency.



In Brief

News and updates from MDC



MDC ANNOUNCES CHANGES TO FIREARMS DEER SEASON SAMPLING

CWD SAMPLING VOLUNTARY DUE TO COVID-19

➔ MDC has changed mandatory sampling requirements for chronic wasting disease (CWD) to voluntary sampling in 30 counties during the opening weekend of this year's November firearms portion of deer season. The change was prompted by ongoing cases and public health concerns in Missouri regarding the COVID-19 pandemic.

The change will impact hunters who harvest deer Nov. 14 and 15 in any of the 30 CWD Management Zone counties: Adair, Barry, Cedar, Chariton, Christian, Clark, Crawford, Franklin, Gasconade, Hickory, Howell, Jefferson, Knox, Linn, Macon, Mercer, Oregon,

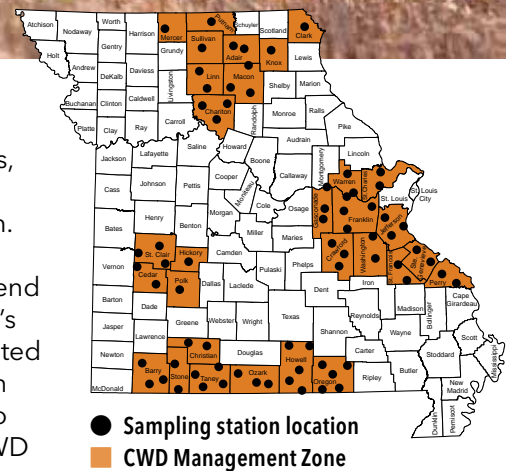
Ozark, Perry, Polk, Putnam, St. Charles, St. Clair, St. Francois, Ste. Genevieve, Stone, Sullivan, Taney, Warren, and Washington.

While CWD sampling is no longer required opening weekend in the management zone, MDC's 71 CWD sampling stations located throughout the zone will remain open. We encourage hunters to have their deer sampled for CWD on the day of harvest.

"CWD represents a great threat to the health of Missouri's deer and elk herds and to our hunting culture," said Kevyn Wiskirchen, private lands deer biologist and CWD mandatory sampling coordinator. "Sampling deer for CWD allows early detection of the disease and allows for rapid management intervention to slow its spread. Hunters play a critical role in helping MDC find and manage CWD by having their deer sampled."

"Although sampling is voluntary this year, to help us detect CWD as early as possible and protect the state's deer herd, we strongly encourage hunters in CWD Management Zone counties to have their deer sampled at one of our stations on opening weekend, or at other locations throughout the duration of deer season."

MDC staff will take precautions to ensure the health of both staff and the public during CWD sampling. Social distancing will be practiced at all stations. MDC staff will wear gloves and face masks at all times. Hunters and those with them will be asked to remain in their vehicles while their deer is being sampled. Hunters will only be asked to provide county of harvest and will not be asked to identify harvest location on a map.



continued on Page 6 »

CWD SAMPLING VOLUNTARY

(continued from Page 5)

We ask hunters and others who are exhibiting symptoms of COVID-19, have recently tested positive for COVID-19, or have a known COVID-19 exposure to refrain from visiting CWD sampling stations.

MDC will continue to offer statewide voluntary CWD sampling and testing of harvested deer during the entire deer season at select locations throughout the state, including participating MDC offices, cooperating taxidermists, and new freezer head-drop locations. Sampling and test results are free. Find locations and more information online at mdc.mo.gov/cwd or by contacting an MDC regional office.

We remind deer hunters to follow carcass movement restrictions when traveling to a sampling station. Learn more at short.mdc.mo.gov/ZuQ.

Before arriving at a sampling station:

- Field dress and Telecheck deer.
- Bring the carcass or just the head.
- Position deer in vehicles with heads and necks easily accessible.
- Capes may be removed in preparation for taxidermy before going to a sampling station.
- Make sure the person who harvested the deer is present.
- Have the hunter's conservation number, along with county of harvest, available.
- If using a paper permit, detach it from the deer for easy access.
- If using the MO Hunting app, have permit and Telecheck information available.

CWD is a deadly disease in white-tailed deer and other members of the deer family, called cervids. The disease has no vaccine or cure and eventually kills all cervids it infects. There have been no reported cases of CWD infecting people, but the Centers for Disease Control and Prevention (CDC) strongly recommends having deer tested for CWD if harvested in an area known to have the disease. The CDC also recommends not eating meat from animals that test positive for CWD.

Get more information on CWD and related regulations online at mdc.mo.gov/cwd, or from our *2020 Fall Deer and Turkey Hunting Regulations & Information* booklet, available where permits are sold and online at short.mdc.mo.gov/ZuA.

Ask MDC

Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov
or call 573-522-4115, ext. 3848.

Q: I went bow hunting last week and came across this oak tree. How did this happen?

➔ Inosculation is a natural phenomenon in which trunks, branches, or roots of two trees grow together. It is biologically like grafting, and such trees are referred to in forestry terms as gemels from the Latin word meaning "pairs" or "twins."

It is most common for branches of two trees of the same species to grow together, though inosculation may be noted across related species. The branches first grow separately in proximity to each other until they touch. At this point, the bark on the touching surfaces gradually wear away as the trees move in the wind. They sometimes self-graft and grow together as they expand in diameter. Inosculation customarily results when tree limbs are braided or pleached, a technique that involves the interweaving of living and dead branches.

Q: I killed a doe this year and found these in the neck. Do you have any idea what they are?

➔ Known as "hemal nodes," these normal anatomical structures pose no risk to animals or to humans. But they do occasionally worry hunters, who may not recognize them.

Hemal nodes — pea-sized spherical structures, usually black or maroon in color — are important filtering organs for animals'

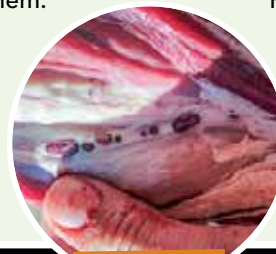


Inosculation

circulatory systems. They may be either solid or fluid-filled and embedded within the fatty tissues of the body.

They're numerous in ruminants, such as deer and elk, and can be seen in other mammals and birds. They resemble a small clot and are often misinterpreted as tumors or bird shot.

Hemal nodes may look unappetizing, but they are not indicative of disease. They are typically trimmed out with excess fat during processing.



Hemal nodes

Q: Are porcupines ever seen in Missouri?

➔ Porcupines (*Erethizon dorsatum*) are rodents best known for their coats of sharp quills, which they use defensively to ward off predators.

This species' range includes northern Mexico, the western United States, Canada, and Alaska. Missouri isn't currently considered a part of their native range; however, archeological records show they did occur here prehistorically.

Over the decades, they have been seen only sporadically in the Show-Me State. Credible observations mostly consist of deceased porcupines found on roadways. In 2006, a porcupine was treed by a dog near Lone Jack, and a year later, quills were removed from two dogs near Oregon, Missouri.

More recently, a live porcupine was reported crossing a road in Taney County in 2017, although it is hard to say if the specimen was native or



Porcupine

exotic, since no confirmation photo was taken. A road-killed porcupine also was discovered in Pettis County in 2019.

The number of sightings has increased over the last 10 years. "Whether this is due to more moving into Missouri from Kansas, or if it is just easier for people to report what they see, we do not know," said Janet Sternburg, MDC resource science supervisor.



Captain Joni Bledsoe

KANSAS CITY REGION

offers this month's

AGENT ADVICE

With deer season upon us, hunters should be aware of new carcass movement restrictions. Whole carcasses, heads, and certain parts of deer harvested in the Chronic Wasting Disease (CWD) Management Zone can be removed from the county of harvest only if they are delivered to a licensed meat processor or taxidermist within 48 hours. Deer harvested within the zone must be reported through the Telecheck system before leaving the county. These regulations are designed to slow the spread of CWD. For more information, refer to the *2020 Fall Deer and Turkey Hunting Regulations and Information* booklet, available where permits are sold, at MDC regional offices, and online at short.mdc.mo.gov/ZXv.

FOR MORE INFORMATION ON CWD, VISIT MDC.MO.GOV/CWD.

What IS it?

Can you
guess this
month's
natural
wonder?

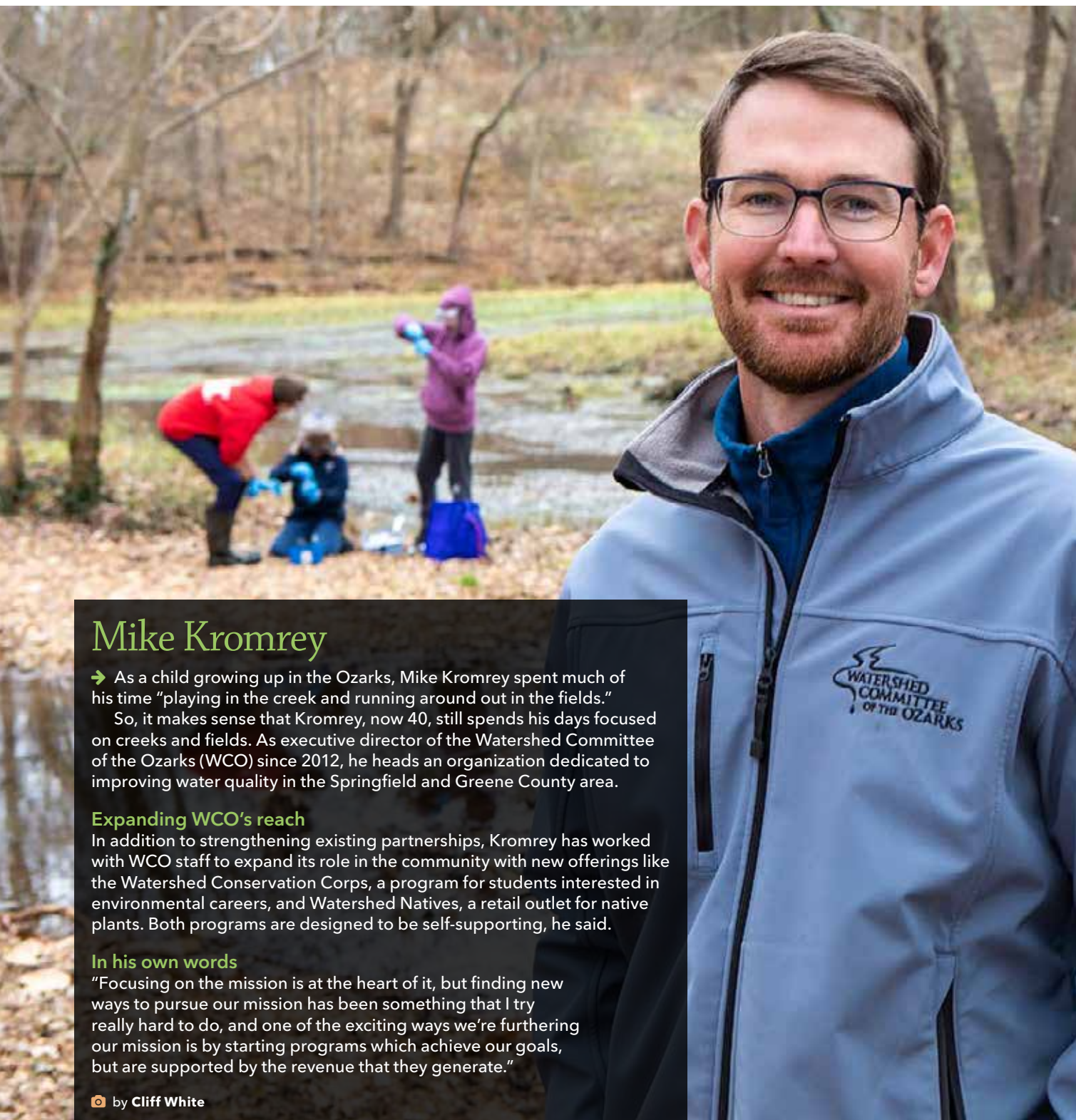
*The answer is on
Page 9.*



WE ARE CONSERVATION

Spotlight on
people and partners

by Larry Archer



Mike Kromrey

➔ As a child growing up in the Ozarks, Mike Kromrey spent much of his time “playing in the creek and running around out in the fields.”

So, it makes sense that Kromrey, now 40, still spends his days focused on creeks and fields. As executive director of the Watershed Committee of the Ozarks (WCO) since 2012, he heads an organization dedicated to improving water quality in the Springfield and Greene County area.

Expanding WCO's reach

In addition to strengthening existing partnerships, Kromrey has worked with WCO staff to expand its role in the community with new offerings like the Watershed Conservation Corps, a program for students interested in environmental careers, and Watershed Natives, a retail outlet for native plants. Both programs are designed to be self-supporting, he said.

In his own words

“Focusing on the mission is at the heart of it, but finding new ways to pursue our mission has been something that I try really hard to do, and one of the exciting ways we’re furthering our mission is by starting programs which achieve our goals, but are supported by the revenue that they generate.”

by Cliff White

What's **your** conservation superpower?

MDC DIRECTOR NAMED AFWA PRESIDENT

Congratulations to MDC Director Sara Parker Pauley on being named president of the Association of Fish & Wildlife Agencies (AFWA) through September 2021. AFWA represents North America's fish and wildlife agencies to advance sound science-based management and conservation of fish and wildlife and their habitats in the public interest.

"It is a huge honor to be selected to serve as president of AFWA, including being the first female to serve in this role since AFWA's beginning in 1902," said Pauley. "As people have flocked to the outdoors in record numbers during this pandemic, this is a crucial time for state agencies to look closely at how we connect with our diverse mix of citizens, some personally experiencing the positive benefits of nature for the first time. It is also imperative that we secure the critical funding through the Recovering America's Wildlife Act, which would be a game changer for conservation in this country. I look forward to working with the state and Canadian agency directors, as well as the outstanding AFWA staff, in the coming year and serving as a catalyst on pushing our conservation priorities forward."



**ASSOCIATION of
FISH & WILDLIFE
AGENCIES**

AFWA represents its state agency members on Capitol Hill and before the administration to advance favorable fish and wildlife conservation policy and funding, and works to ensure that all entities work collaboratively on the most important issues. Working together, the association's member agencies are ensuring that North American fish and wildlife management has a clear and collective voice.

To learn more, visit short.mdc.mo.gov/Z6H.



MDC Director Sara Parker Pauley was named president of the Association of Fish & Wildlife Agencies, which represents all of North America's fish and wildlife agencies, through September 2021.

WHAT IS IT? ALLIGATOR GAR

The alligator gar, recognized as the state's biggest gar, has two rows of teeth in its upper jaw. It's one of the largest freshwater fishes in North America, reaching 10 feet and 300 pounds. The alligator gar is one of the few native fish large enough to help control invasive, human-introduced Asian carp, which is one reason many conservation departments work to reintroduce it and prevent its decline.





Healthy Streams,

A PARTNERSHIP BETWEEN MDC
AND THE STREAM STEWARDSHIP
TRUST FUND PROTECTS
MISSOURI'S FLOWING WATERS

by **Bill Graham**



Healthy State

Bull Creek in
Christian County

PHOTOGRAPH BY
NOPPADOL PAOTHONG

Healthy waters that Missourians enjoy in the outdoors begin in the uplands, where rainfall and groundwater flow downhill into creeks that merge into streams. Those streams feed lowland rivers and lakes, waters that won't support fishing, swimming, boating, and floating unless streams are healthy throughout the drainage.

MDC and conservation partners use voluntary projects aided by the Stream Stewardship Trust Fund (SSTF) to complete large stream improvement projects. The trust fund, managed by the Missouri Conservation Heritage Foundation (MCHF), assists projects designed to meet MDC conservation goals and are approved by the U.S Army Corps of Engineers.

"The Stream Stewardship Trust Fund is one tool we use to complete large stream improvement projects," said Sherry Fischer, MDC stream and watershed supervisor.

Helping Dynamic Waters

Streams are always changing. They are powerful and dynamic forces. Their varied water flows and sediment loads shape river banks, stream beds, and pool depths. Human land use practices or structures, such as bridges, can alter water flows and sediment loads in ways that damage streams. But people can also restore and protect streams using both human engineering and nature's healing abilities.

The SSTF and grants from other partners help pay for costly stream engineering projects and conservation easements. They protect small and mid-size streams where smallmouth bass swim and children splash and play. For example, a new bridge on Tavern Creek in Miller County and bank stabilization on Bull Creek in Christian County are two recent projects of the many that have protected Missouri streams.

"We can make a big difference for stream quality," Fischer said.

Under the federal Clean Water Act, developers are required to mitigate any damage to a stream before they can obtain a construction permit from the Corps of Engineers. Developers can directly bear the cost of stream restoration onsite, or they can purchase credits held by stream mitigation banks or in-lieu fee programs. Those credits are for stream improvements completed or planned. The SSTF is an in-lieu fee program administered by the Missouri Conservation Heritage Foundation, a private non-profit conservation partner. When developers purchase mitigation credits from the SSTF, that money can provide funding for stream stewardship projects.

Priority is given to high quality streams or those with imperiled species. MDC staff provide expertise and assistance, from project plans to help with tree planting along the stream corridor. This enables SSTF to protect some of Missouri's finest small and mid-size streams in a state where people value their rivers. Since the 1990s, MDC and partners have used \$6.1 million in SSTF grants to fund more than 100 projects, and 10 more are in progress. Not all project requests can be accommodated due to fund availability, project location, or shortfalls in ecological uplift.

Robert and Barbara Kipfer got help from MDC and the SSTF to halt stream bank erosion on their land.



Helping Rural Communities and Endangered Fish

The federally threatened, state endangered Niangua darter occurs only in Missouri in northern-flowing tributaries of the Osage River. MDC has worked to improve habitat for the endangered Niangua darter in these drainages. Dams and reservoirs affect the darter's habitat, and outdated bridges and low-water crossings cause stream changes and block fish passage. This hurts the darter's genetic diversity and its ability to repopulate suitable riffles and pools. Those outdated crossings can also pose problems for people when flooding blocks vehicle traffic, causing detours and delays for residents, school buses, emergency responders, and farm equipment.

The Miller County Commission has partnered with MDC, SSTF, and the U.S. Fish and Wildlife Service (USFWS) to replace several stream crossings, helping both darters and drivers. One recently completed bridge across Tavern Creek serves traffic on Clark School Road. The county's road district would not be able to afford the bridge replacement without help from the conservation partners, said Miller County Associate Commissioner Travis Lawson.

"It's helped us replace bridges," Lawson said. "It is working for the county, and it is working for the stream. The last contractor who won the construction bid was born and raised a mile from that bridge. He's planning on bidding on others. This helps our local residents and puts money back into our county, too."



The new bridge span has a wide opening beneath the deck where the water flows, unlike the prior bridge with a narrow and blockage-prone box culvert. This allows a more natural water flow and sediment movement typical of an Ozark stream. Niangua darters and other aquatic life can move upstream or down. Water still overflows the bridge when flooding follows heavy rains, but the new design allows the water to flow more naturally.

Biologists found increases in Niangua darter population densities and movement upstream into new pools after some of the old crossings on Little Tavern Creek and Tavern Creek were replaced, said Greg Stoner, a retired MDC fisheries management biologist who helped implement the projects. Besides numbers, fish movement in streams enhances genetic diversity.

"The more genetic diversity they have, the more resilient a fish population is going to be during the unusual situations they get in," Stoner said. "It benefits all the aquatic species."

Tavern Creek has a variety of clear-water fish species typical to the Osage River basin. Local residents still fish for many species in the stream.



Miller County Associate Commissioner Travis Lawson says working with MDC and the SSTF has enabled the county to upgrade several stream bridges.



A new bridge over Tavern Creek in Miller County restored fish passage between pools for endangered Niangua darters and other aquatic life.



The SSTF utilizes partnerships to protect or restore healthy streams.

Saving Best Places

Sometimes boosting stream health requires a change in the river to offset human land use.

Robert and Barbara Kipfer of Springfield used the SSTF program to protect an eroding bank of Bull Creek on their Christian County farm. A variety of fish, crayfish, mussels, and insects live in the clear, cool stream's riffles, pools, and eddies. Bull Creek eventually flows into Lake Taneycomo, a favored cold-water trout fishing destination for anglers.

The Kipfers host family, friends, researchers, and school groups at their scenic Bull Creek valley farm. Their grandchildren swim in the deeper pools. But a problem developed along a creek section bordering an old fescue-covered hay pasture. High water flows eroded a bank, causing land loss and leaving a wide and shallow stream bed not as hospitable to fish.

The Kipfers, both Missouri Master Naturalists, noticed floods and gravel deposits growing bigger. Development from Springfield's growth has entered Bull Creek's upper drainage, possibly increasing water flows after rains. After they added the tract with the eroding hayfield to their farm, they planted trees along the bank to stabilize it. But a major flood eroded away those trees and more bank.

A \$95,700 stream stabilization project using SSTF funds was planned and implemented for the Kipfer property with the help of Dave Woods, MDC fisheries management biologist. Rock and vegetation were installed to



stabilize the eroding bank. Three fish-friendly reinforced stream crossings were also installed for light vehicles and equipment. Several thousand trees were planted as a 100-foot buffer along the riparian corridor to keep soil in place and provide wildlife habitat. More than a mile of Bull Creek and a tributary on their property is now protected by a perpetual conservation easement held by MDC. The easement was a requirement for the project to be approved. Landowners control access to property within the easement. But land use practices within the easement must meet guidelines benefitting natural stream ecology.

"I was out there after spring rains and it looks great," Woods said. "Erosion has slowed, the channel has deepened, and the gravel bar has stabilized. The trees are starting to grow along the banks."

Bull Creek is designated as an

Outstanding State Resource Water with high water quality by the Missouri Department of Natural Resources. The stream's health also contributes to maintaining water quality in Lake Taneycomo and the White River basin.

"It's a pristine stream right now, and we want to keep it that way," Woods said.

The Kipfers are counting on the rock project to allow a wider tree buffer to become established, which will help keep the stream naturally healthy. Smallmouth bass swim in the stream and an occasional rainbow trout is seen. MDC biologists have found unique crayfish and mussels in upper Bull Creek.

"It is a very, very clear stream," Robert Kipfer said. "It has been named one of the outstanding streams of Missouri. It has a wide variety of flora and fauna. The water quality is so good, it tells us what a stream can be if we take care of the environment."

Partnerships Serve Conservation

Missouri's nationally renowned conservation achievements are due to partnerships between public agencies, private organizations, and citizens. A key partner for MDC and others is the Missouri Conservation Heritage Foundation (MCHF). The foundation administers the Stream Stewardship Trust Fund (SSTF) that has helped enhance many miles of Missouri's best streams. In partnership with MDC, the SSTF helps pay for improvements and protections for small and medium-sized streams.

But the MCHF also plays a broad role in promoting conservation and outdoor recreation. MCHF is a nonprofit organization founded in 1997 to advance conservation and the appreciation of Missouri's natural resources including fish, forests, and wildlife. The organization works with donors and other conservation partners to financially support the mission and priorities of MDC at the state, national, and international level.

"This means we invest in everything from migratory bird programs to youth hunting and fishing events to endangered species habitat protection," said Tricia Burkhardt, MCHF interim director. "We support the state's nature centers, as well as hiking and wildlife viewing activities — anything that allows Missourians to enjoy the outdoors in urban and rural areas."

MCHF is governed by a volunteer board of directors comprised of conservation, community, and business leaders. The organization has raised and invested more than \$22.4 million in conservation projects large and small. MCHF has sponsored outdoor programs for disabled veterans and people with special needs. They also provide long-term support for the Missouri National Archery in the Schools Program.

"We believe every student has an opportunity in archery and our support is one of the ways we invest in the lives of those who will carry on conservation's future," Burkhardt said.

Donations and bequests help MCHF's specialized funds to support conservation programs or public areas. MCHF can also develop a fund to match a donor's desired conservation goal. To contact the MCHF, visit mochf.org, call 573-634-2080 or toll free 800-227-1488, or email at mchf@mochf.org.

The SSTF helps pay for stream stabilization projects that landowners might not be able to otherwise afford.



Making Stream Protection Affordable

MCHF has obtained Corps of Engineers approval to use the SSTF for projects in selected river basins. When property owners wish to make a stream improvement, MDC and partners may be able to help. Most projects are on small streams because larger streams are difficult and expensive to manage. But even effective improvements for small streams are costly.

In many cases, a partnership between MDC, the Missouri Conservation Heritage Foundation SSTF program, the Corps of Engineers, and other conservation partners is the only way landowners or property managers can get expensive projects like stream bank armoring or bridge replacements done. Conservation and communities benefit. Any developer or property owner seeking more information about the SSTF program can contact their local MDC office for more information (see Page 2 for contact information). MDC staff will offer expertise in stream corridor issues and connect them with programs that may be able to help.

"It is important to remember that more than 90 percent of the land in Missouri is privately owned," Woods said. "If we want to do conservation on a watershed scale, not only for rivers and lakes but for wildlife, too, the Stream Stewardship Trust Fund is a great tool." ▲

Bill Graham is an MDC media specialist for the Kansas City and Northwest regions. He's a lifelong hunter, angler, and camper. He also enjoys hiking and photographing Missouri's best wild places.





Nature's bounty — including sticks, evergreens, berries, and feathers — and a little imagination can produce a beautiful holiday wreath.

The background is a textured, gold-colored paper. It is decorated with pinecones and red berries. In the top left corner, there is a large, brown pinecone with some white frost. In the top center, there is a small branch with red berries. In the top right corner, there is a large, dense cluster of red berries. In the bottom left corner, there is a large, dense cluster of red berries. In the bottom center, there is a small branch with red berries. In the bottom right corner, there is a large, brown pinecone with some white frost.

Nature's Holiday Décor

BRINGING THE OUTSIDE IN
story and photographs by Candice Davis

For many Missouri families, nature is a way of life. It doesn't stay neatly in its place outdoors, but spills into the house, into the heart, and right into the holidays. That's how it is for Jamie Koehler, assistant manager of MDC's Cape Girardeau Conservation Nature Center. Family traditions that started when she was young are sewn with strength into her daily routine and continued holiday traditions.

"We were always going for long walks in the woods and coming back with our pockets full of treasures like rocks, bones, and nuts," she said. "The shelves in my room had shells, sticks, and leaves mixed in with the books I was reading, and I could tell you where I picked each one up."

Koehler remembers making a wreath of pinecones and acorns when she was just barely school age.

"It was suggested I might paint it gold to make it prettier, but I thought it was beautiful just as it was," Koehler said.



Jamie Koehler heads into the woods to collect materials for her latest crafts.



For Jamie Koehler, finding evergreens and pinecones means limitless possibilities for holiday decorating.

From a Hobby to a Career

This love of nature and creating things has stuck with her, leading her into her current career, and making her the perfect person to lead the Cape Nature Center's nature décor programs. Koehler teaches how to make wreaths, centerpieces, and ornaments out of natural items.

Before the programs, Koehler and nature center volunteers head to the woods to gather items.

In the spring and summer, they collect flowers to press or dry for making cards and wall décor. In the fall, the colorful leaves are perfect for pressing. But winter has its own bounty for those who know to seek it.

"Winter gets such a bad reputation for a time to be outside, but it is wonderful if you just dress appropriately," she said. "Admire the structures of the trees without their leaves, the moss, the fungi; there's still life everywhere and lots of things to collect."

Koehler uses MDC's Seedling Order Form (mdc.mo.gov/seedlings) to add more plant diversity to her family's property. Her main priority is for wildlife habitat.

"However, I must admit, sometimes my plant choices are based on what I can use; whether the plants provide fruit, nuts, or wood," she said.

Conscientious Collector

She also seeks permission to look for items on other private land and makes sure to share what she finds with those landowners. Also, she looks on conservation areas, where some collecting is allowed for personal use, depending on the area. She cautions people should always check area specific regulations and take care to follow important ethical practices when collecting and foraging. Having permission to access a property is essential, as well as respecting the habitat.

"Be aware of endangered plants and leave them be and never collect all of a single species in an area," Koehler said. "Always leave enough plants to regenerate or reseed."

Centerpiece Instructions

Basic Materials: hot glue gun, florist wire, natural items

1. Collect materials and tools in a space where you can make a mess. Because you will.
2. Start with a base of some sort. A tree cookie was used for this project, but driftwood, stone, or even whimsical things like boots or mittens could be used as a base.
3. Identify the three parts to your arrangement. There should be a "thriller, filler, and a spiller."
4. Start with your "thriller." This is one or two showy pieces. Secure them to your base using hot glue or wire if they don't sit naturally in the base.
5. Next, apply the "filler" to fill out the rest of the arrangement with smaller or less colorful objects. Don't let them outshine the thrillers.
6. Then ground the piece with something that spills out over the edge.
7. Another major rule to obey is "less is more."
8. Then spend some time moving and rearranging. Add or take away as needed until you are happy with the arrangement.
9. Make sure everything is secure and will stay put. One of the disadvantages of natural items you should be aware of is that sometimes things will shed or fall apart. Sometimes a shot of hair spray can keep things together a little longer. You may have to keep tidying your arrangement.



Cardinal Pinecone Ornament Instructions

Materials: pinecones, red paint, felt, glue or hot glue gun, small wooden bead (about an inch in diameter), black marker, string

Prep: You may want to cut beaks and wings out of the felt in advance to make the project easier for very young children.

1. Collect pinecones. This is a great place to start a project with children. Let them pick up pinecones on a walk and then they'll be able to complete the project from start to finish.
2. With a small paint brush, paint the pinecone and bead red, like the body of a cardinal. Then let the paint dry.
3. While the paint is drying, cut wings and beaks out of the felt.
4. Position the wings on either side of your pinecone and glue them on. Then, fold the felt beak pieces and glue them onto the face of your cardinal.
5. Use the black marker to add eyes to the bird.
6. Glue the head to the pinecone.
7. Loop a 6-inch piece of thin string and use the hot glue to fasten onto the back of the bird, making it an ornament.





Get the kids involved! Decorating with nature is a perfect way to incorporate the family. Make it part of a nature walk, collecting treasures as you go along.

Tips from a Forager

For safety reasons, Koehler said it's also important to be aware of your surroundings and always be prepared with water, compass, and map.

Nature can be predictable, but often it's not. Koehler said though she usually has in mind what she's looking for when foraging, she finds many other unexpected items.

"I think one helpful tactic is to look at the world as if through the eyes of a child. If you can do that, you see beauty everywhere," she said. "Even broken things have a natural charm and grace. Sometimes I must walk completely around something to see it in a different light or angle. Sometimes I turn it over to see something special."

So, when out foraging for natural décor items, expect the unexpected and bring tools. A pack for carrying your treasures is probably most important. Koehler brings gloves, scissors or garden snips, and paper bags.

"I also like to carry a journal, so I can take pictures with my phone and record findings," she said.

When the baskets are full, she doesn't take them into the house immediately. Instead, she lets them sit outside in the shade for a while "to let all the creepy crawly things vacate." She also bakes pinecones in the oven a little bit to help them open fully.

Crafting Corner

When it's time to get crafty, she always has a hot glue gun, florist wire, pruners, and scissors on hand. When crafting with children, there are more abstract tools to have in your toolbox: preparation and patience to ensure the tasks and tools are age appropriate.

"I may do a little prep and assembly myself to make it easier for children," she said. "Also, remember children's fine motor skills are still unrefined. You don't want to give them something they cannot do; that is so frustrating for little ones."

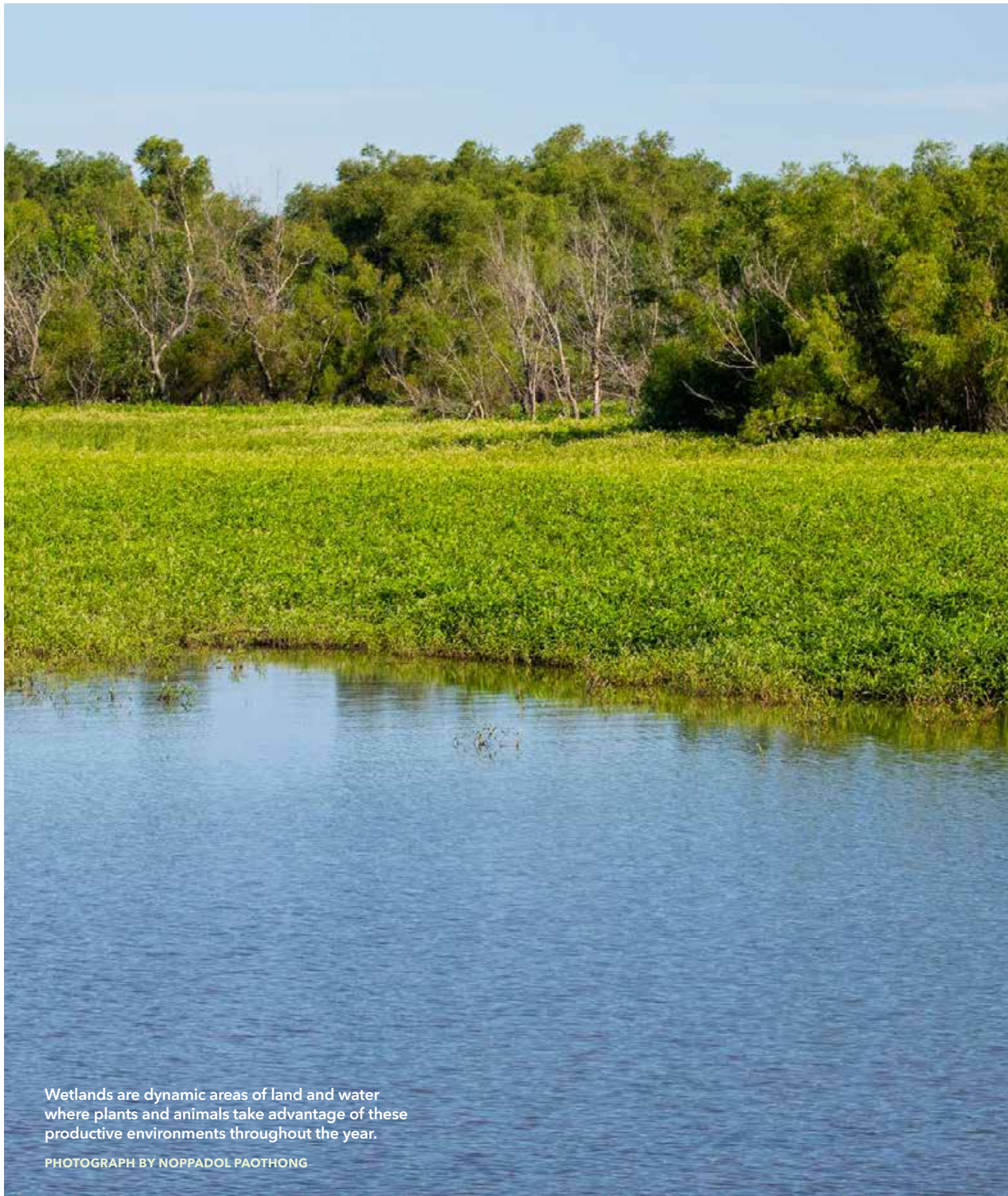
Another thing to keep in mind is that it is their project, not yours. If it doesn't look like the picture, that is just fine.

"It is a work of art just as it is," she said. "The only limit is the imagination."

Koehler creates floral arrangements for holidays and ordinary days. Natural items can be added to a mantel, over doorways, porches, or stair railing in the forms of garlands or swags. She also cautions not to get caught up in perfectionism.

"The process of creation is vital to all of us, it just manifests differently," she said. "I like that I can never do it wrong. It is mine, so it is right." ▲

Candice Davis served as the media specialist for MDC's Southeast Region for 12 years.



Wetlands are dynamic areas of land and water where plants and animals take advantage of these productive environments throughout the year.

PHOTOGRAPH BY NOPPADOL PAOTHONG



Montrose Conservation Area

QUESTIONS RESTORATION

WORKING WITH —
INSTEAD OF
AGAINST — NATURE

by Larry Archer

As Nicky Walker surveys the meandering sloughs and wetland flats in Unit A of Duck Creek Conservation Area (CA), she's quick to point out that the dozen or more cattle egrets taking advantage of the surrounding water-filled sloughs on a hot July day would have been nowhere in sight a decade ago.

"If we were back 15 years ago in the old configuration timeframe, at this time of year, you would basically see cornfields with no water," said Walker, a wildlife management biologist who has been Duck Creek CA's manager since February 2018. "And now what you see today is microhabitats with uplands and a wetland component mixed in. You see wood duck and hooded merganser hens with ducklings utilizing the wetland sloughs, baby raccoons, turkey broods, and whitetail deer benefitting from the resource. The wetland complex has provided a community approach to wetland management that benefits a much larger assortment of wildlife."

The 6,318-acre Duck Creek CA, located in southeast Missouri between Cape Girardeau and Poplar Bluff, is one of five MDC-owned, intensively managed wetlands that have been undergoing a 10-year, multi-million-dollar renovation as part of the department's Golden Anniversary Wetland Initiative, said Wetland Ecologist Frank Nelson.

"The impetus was to look at the five older intensively managed public wetlands in the state — Ted Shanks, Fountain Grove, Montrose, Duck Creek, and Schell-Osage," said Nelson. "Instead of taking a patchwork approach, we realized it was time to stop addressing symptoms and focus on the root causes of problems that plagued these older wetlands. We took a step back and looked at the entire system and how we could rejuvenate these wetlands for the next 50 years."

Working Against Nature

At one time, wetlands dominated the southeast corner of Missouri — an area that includes Duck Creek CA and neighboring Mingo National Wildlife Refuge — but, as with many of the



By rehabilitating sloughs, taking advantage of surrounding topography, and using water control structures, diverse wetlands are enhanced and managed for a range of species and recreational uses.

state's marshes and swamps, they were drained and converted to agriculture. Even by the 1940s–1950s, when conservationists began to recognize the importance of wetlands, their approach was narrowly focused, Nelson said.

"We originally threw up levees to hold water deep enough so that we could get our boats out to waterfowl hunt, but over time we've realized that we could do a better job of rehabilitating these areas by creating habitat for a range of critters," he said.

Those original levees, like any typical flood-control levee, were designed with simplicity in mind to either keep water in or out and not be over-topped by floods. During the growing season, the impounded fields would be held as dry as possible and planted with corn or soybeans. In the fall, area managers would use water-control structures to flood the fields for fall migrating waterfowl.

Steep sides, decades of exposure to the elements, and inevitable flooding left levees and water control structures in need of frequent repair or replacement. To help address this emerging engineering challenge, the Golden Anniversary Wetland Initiative involved changing the very nature of how our public wetlands are designed, said Wetland/Waterfowl Ecologist Andy Raedeke.

"One of the major drivers is how to design infrastructure that works with natural systems rather than against them," Raedeke said. "Before, we thought we could control nature by building levees and pumping water to have the habitat where and when we wanted it. It turns out many of our problems were caused by this mindset. So not necessarily going back to what the Native Americans saw, we began to ask how can we design more resilient infrastructure that is working in enhancing system processes rather than trying to dominate and fight nature."



Duck Creek Conservation Area

Water Flows and Natural Communities

To tackle this new approach, MDC brought together a team from different disciplines, including fisheries, wildlife, hydrology, and engineering, to develop the “what” and “how to” in the renovation.

“With these kinds of renovations, our goals often revolve around restoring the natural flow patterns and natural vegetation communities, while at the same time of accommodating our multiple public uses,” Nelson said. “I think those are pretty universal, but how it is put on the landscape is different because the amount of water in the watershed, soils, water table, and location on the floodplain varies. The objectives are trying to rehabilitate and improve ecological function, but that may look different on each area.”

Restoring water to flow more naturally requires more than just undoing the past, it requires uncovering the past with a combination of technology and old-fashioned research. Planners, using data collected from laser mapping — a technology known as light detecting and ranging (LiDAR) — and traditional sources of historic maps, photographs, and documents, identify the original routes of streams and wetland depressions that would have been connected by historic flooding.

“What we try to do is figure out how the wetlands functioned historically and how do they operate today. LiDAR helps with this immensely,” he said. “It allows us to understand the topography at a much higher resolution and at a much broader extent than with just general land surveys.”

The productivity of wetland habitats produce adequate food and cover that attracts even non-wetland dependent species, like this dickcissel and deer.



Leveling the Levees

One of the ways planners facilitate the natural movement of water across the landscape is to modify the height, slope, and position of levees, along with incorporating broad spillways for flood waters. This allows flood waters to flow more slowly, evenly, and naturally through the area. Because the water is moving slower with less energy the levees do not have to be repaired after floods, therefore saving time and money.

“Historically, we’ve tried to reduce diversity, and a lot of our wetland restoration work now is about hardwiring that complexity back in,” Nelson said. “Restoring sloughs and taking advantage of the surrounding topography helps do just that.”

Community Planters

Having the literal groundwork complete on restoring the natural water flow means the figurative groundwork has been laid for restoring the natural vegetative communities. With the right water conditions, seed producing wetland plants like smartweed, millet, and sedges respond. With a little help from reintroducing select aquatic plants, other species like bull-tongue arrowhead, burreed, and pickerelweed have also taken off. Combined with the responding insect populations that are also drawn to these plants, a wide range of migratory species, including shorebirds and waterfowl, have access to a more natural and balanced diet as they pass through seasonally.

“Wetland vegetation is diverse naturally,” Nelson wrote of Duck Creek CA in 2014. “Some plants handle the extremes of drought, while others thrive in flooded conditions. By establishing a foundation to manage native plants, we have essentially provided an open buffet for multiple species.”



Reintroducing select aquatic plants, like bulltongue arrowhead, burreed, and pickerelweed, restores a component of habitat complexity that is often missing and benefits pollinators, aquatic bugs, fish, and wading birds.

Although wetland restoration can appear to be re-wilding the environment, controlling water levels through structures is an important part of management to mimic natural processes.



Gateway to Nature

And while providing habitat for species that rely on wetlands, reducing the effects of flooding, and improving water quality for those living downstream are all important benefits of restored wetlands, they also offer another benefit — the opportunity for Missourians (and our visitors) to connect or reconnect with nature, Raedeke said.

Traditionally, Missouri’s intensively managed wetlands were designed with waterfowl and waterfowl hunters in mind, but even with a redesign that focuses on the entire ecosystem to benefit many species, waterfowl continue to benefit, he said.

“It is a pretty compelling story, looking at the change over time in the duck numbers that we’re supporting in Missouri,” he said. “And the increase in waterfowl hunter trips.”

Now, the attraction has broadened, especially for bird-watchers in particular and wildlife viewers in general.

“Many of these restored wetlands are now identified as top birding locations in Missouri,” he said.

But to suggest that the appeal is limited to birders would be a mistake, as wetlands harbor a variety of amphibians, reptiles, and mammals.

“People probably are not aware of the diversity of critters that use our wetlands and the role restoration plays in providing habitat for these species,” he said. “Wetlands are one of the most popular places for outdoor recreation and provide a gateway for people to get excited about nature.”

The Miracle of Microhabitats

Back at Duck Creek CA, Nicky Walker has seen the benefits of restoring the water's natural flow and re-establishing the native plants. More than 10 miles of steep-sloped levees were levelled, and a mile of drainage ditch was replaced by a much shallower 2-mile meandering channel. The broader, shorter, contour-oriented levees that help create a variety of habitats are indistinguishable to the untrained eye.

"By doing the renovation, by putting in meandering scours, and by putting in areas that are going to hold water versus areas that are going to drain water, we've created microhabitats within the wetland," she said. "These microhabitats have provided opportunity to see an increase

in crayfish, reptiles and amphibians, and native fish species, specifically a lot of our species of conservation concern. By monitoring these species, we can track the health and success of the wetland renovations."

Determining the ultimate success of the renovation at Duck Creek CA — and at the other four areas targeted by the Golden Anniversary Wetland Initiative — will require continued survey and monitoring, but Walker is happy with the initial results.

"For the most part, the original function that they were trying to create has been successful, and we've hopefully created a system that's low in maintenance and high in reward," she said. "It does take you back into time. You can imagine what this landscape looked like before we came in and created ditches, when this was a true, historic wetland in the southeast region." ▲

Larry Archer is the associate editor of Missouri Conservationist. While never having participated in a wetland restoration, he has incorporated water into his own backyard nature restoration.



Mallard

The Wetland Story Continues ...

Wetland restoration is not limited to public land. As part of the Farm Bill in the mid-1990s, MDC partnered with the federal Natural Resources Conservation Service to facilitate the Wetland Reserve Easement (WRE) program, which continues to this day. Together, the agencies created four Wetland Emphasis Teams (WETs) composed of an engineer, soil scientist, and biologist in different corners of the state to restore wetlands on land that was too wet to farm.

This team's approach to wetland restoration on private land charted this new course of wetland engineering and rehabilitation that has also been implemented in the Golden Anniversary Wetland Initiative. To date, over 160,000 acres of wetlands have been restored by the WETs across the state.

If you have land that is regularly flooded, perhaps it's time to look at other available options and consider becoming part of this successful restoration story. You can contact the WETs in your region or work through your local private land conservationist to see if your land qualifies for WRE. You can hear more about WRE and what it has done for the land from a fellow WRE landowner here: short.mdc.mo.gov/Z64.



Duck Creek
Conservation Area

Get Outside

in NOVEMBER



→ Ways to connect with nature



Winter Trout Fishing

Just because the calendar says November doesn't mean you have to put the fishing poles away! Missouri is a great place to fish year-round. Rainbow trout are stocked in community lakes across the state, and the catch-and-release season opens Nov. 13. To find a fishing area near you, visit short.mdc.mo.gov/ZoH.

Oysters in the Woods

Oyster mushrooms, a choice edible, fruit year-round, growing in overlapping clusters on stumps, logs, and trunks of deciduous trees. This time of year, they may be easier to spot, so be on the lookout. Remember, only eat mushrooms you know are safe. To be sure, consult *A Guide to Missouri's Edible and Poisonous Mushrooms* at short.mdc.mo.gov/ZYM.



Squirrel Hunting

Squirrel season is open through Feb. 15, 2021. It's a great introductory sport for novice hunters. If you'd like to mentor a youth or new hunter, give it a try! For more information on squirrel hunting, visit short.mdc.mo.gov/Z4o.

Natural Events to See This Month

Here's what's going on in the natural world.



Some red bats overwinter in leaf litter and among dead leaves, clinging to trees



Pickerel frogs move into deeper sections of caves in preparation for winter



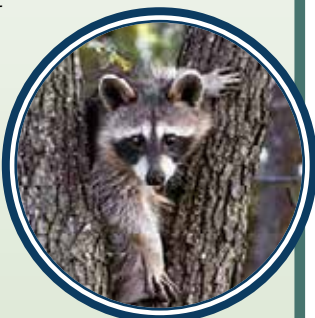
Adult male tiger salamanders move to fishless ponds or marshes

Scavenger Hunt

Get your **nature boost** by taking a stroll through Missouri forests. This time of year, it's like seeing things for the first time. With the majority of leaves off the trees, you'll discover things that have long gone unnoticed. Here's a list of things to get you started. Or make your own list and make it a fun scavenger hunt for the whole family! Get out and get exploring!

Eagle Eye: It's a good time to look for bald eagles. They are usually seen near lakes, rivers, and marshes as they forage for fish or carrion.

Lazy Raccoon: On sunny winter days, raccoons may lie on limbs or other high sunny spots getting their daily dose of Vitamin D.



Just Ducky: If your outdoor hike takes you near water, be sure to have a pair of binoculars and a field guide handy to identify the ducks and other waterfowl. Some frequent flyers include American wigeons, canvasbacks, and common mergansers, just to name a few.

Pecan Pickin': Pecans are ripe and falling to the ground. It's a good time to gather them for use in pies, cookies, and other baked goods. But better hurry. These are favorites of larger birds, squirrels and other small rodents, opossums, raccoons, and deer.

Getting Squirrely: As eastern gray squirrels run around the woods and jump from tree to tree, take a closer look. Their fur becomes longer and more silvery-gray and their ears have a noticeable projecting fringe of white fur.



Voles and mice are active, eating grass and seeds and creating tunnels under the snow



American witch-hazel blooms



Interested in exploring the outdoors, but unsure where to start? It's as easy as stepping out your door! Join host **Jill Pritchard** from the Missouri Department of Conservation as she explores everything nature has to offer — from health benefits and wildlife viewing, to outdoor recreation and unbelievable conservation stories. Subscribe and get your own Nature Boost!



Download the podcast at **mdc.mo.gov/natureboost**

Places to Go

CENTRAL REGION

Cooper Hill Conservation Area

Hunting, fishing, birding,
and scenic views on the
Gasconade River

by Bonnie Chasteen

✱ November is a good time for history buffs, hunters, anglers, and birders to visit this little-known area near the Osage County village of Cooper Hill.

Situated at the confluence of Third Creek and the Gasconade River, the 214-acre Cooper Hill Conservation Area (CA) is the site of the former Leach Steam Saw and Grist Mill. It was constructed in 1858 and operated continuously, producing cordwood, until 1924. Although the old mill is gone, you'll find the Leach-Baker Cemetery, which has headstones dating from the 1800s, up the hill from the parking lot.

November hunters will find decent populations of deer, dove, turkey, and squirrels. Anglers can try their luck for bass, catfish, crappie, suckers, and sunfish in the Gasconade River.

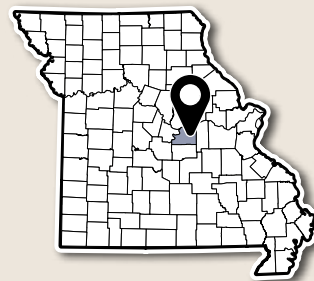
Floaters can access the Gasconade River from the parking lot and from gravel road C.R. 821, where it is possible to hand-launch canoes or small boats, but there is no access for trailered boats.

It's also possible to hike along the north side of the area, where bluffs afford scenic views of the Gasconade River. Birders can expect to see a variety of species, including red-bellied woodpecker, golden-crowned kinglet, white-throated sparrow, and white-breasted nuthatch in the forest and woodland areas.



With access to both Third Creek and the Gasconade River, Cooper Hill CA offers plenty of fishing and floating opportunities.

DAVID STONNER





COOPER HILL CONSERVATION AREA

consists of 214 acres in Osage County.
From Mt. Sterling, take Route A south 2.5 miles,
then Route D west 2.75 miles to the village
of Cooper Hill.

38.4286, -91.6639

short.mdc.mo.gov/ZuL 573-897-3797

WHAT TO DO WHEN YOU VISIT

-  **Birdwatching** The eBird list of birds recorded at Cooper Hill CA is available at short.mdc.mo.gov/Zuu.
-  **Camping** Open camping — walk-in/float-in/backpack
-  **Fishing** Black bass, catfish, crappie, sunfish, white bass
-  **Hiking** No designated hiking trails, but service roads are open to hiking.
-  **Hunting Deer and turkey**
Deer and turkey regulations are subject to annual changes. Please refer to the Spring Turkey or Fall Deer and Turkey booklets for current regulations.
Also **dove** and **squirrel**
-  **Trapping** Special use permit required.

WHAT TO LOOK FOR WHEN YOU VISIT



Bald eagle



Wild turkey



Fox sparrow



White-tailed deer



Spring plumage

Horned Grebe

Podiceps auritus

Status

Uncommon

Size

14 inches

Distribution

As a transient, statewide; as a winter resident, southern Missouri



Winter plumage

Did You Know?

People once persecuted horned grebes, thinking they killed fish populations. Thanks to scientific research and studies, it was found they have little impact on fish populations. Grebes were historically overhunted for their feathers, which had market value as hat decorations.

The horned grebe is a small, dark, ducklike bird. We are most likely to see them in winter plumage, though breeding plumage may be visible in spring. Grebes have unique feet, with flaplike lobes along the toes instead of being webbed like those of ducks. Horned grebes are not usually seen in flight or on land. They stop in the Show-Me State to rest and forage on large reservoirs and deep rivers, and winter on unfrozen lakes. Like other grebes, they are accomplished swimmers. To escape danger, horned grebes dive below the water surface.



ECOSYSTEM CONNECTIONS

Horned grebe populations have been declining significantly in recent decades. Researchers suspect habitat loss and disturbance, oil spills, wetland draining, forest cutting near breeding territories, and more. Their breeding territory to the north is shrinking, and climate change over the next century may reduce it much more.



FOODS

Horned grebes dive below the surface of the water to capture crayfish, aquatic insects, small fish, and other small aquatic animals.



LIFE CYCLE

Horned grebes are present in Missouri from late September through mid-April, but peak during migration, in March and November. They breed in central and western Canada and Alaska. Nests are typically built in shallow freshwater ponds and wetlands on a floating raft of vegetation. Females have one to two broods each year, comprised of three to eight eggs, which are incubated in 22-25 days.

Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖

Free MO Hunting and MO Fishing Apps

MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at short.mdc.mo.gov/Zi2.

FISHING

Black Bass

Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:

- ▶ Catch-and-Keep:
May 23, 2020–Feb. 28, 2021
- ▶ Catch-and-Release:
Open all year

Nongame Fish Giggling

Streams and Impounded Waters,
sunrise to midnight:
Sept. 15, 2020–Feb. 15, 2021

Paddlefish

On the Mississippi River:
Sept. 15–Dec. 15, 2020

Trout Parks

Catch-and-Release:
Nov. 13, 2020–Feb. 8, 2021

TRAPPING

Beaver, Nutria

Nov. 15, 2020–March 31, 2021

Other Furbearers

Nov. 15, 2020–Jan. 31, 2021

Otters, Muskrats

Nov. 15, 2020–Feb. 20, 2021

Rabbits

Nov. 15, 2020–Jan. 31, 2021

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Zib. Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at short.mdc.mo.gov/ZZf.

HUNTING

Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.

Open all year

Crow

Nov. 1, 2020–March 3, 2021

Deer

Archery:

Sept. 15–Nov. 13, 2020

Nov. 25, 2020–Jan. 15, 2021

Firearms:

- ▶ Early Youth Portion (ages 6–15):
Oct. 31–Nov. 1, 2020
- ▶ November Portion:
Nov. 14–24, 2020
- ▶ Late Youth Portion (ages 6–15):
Nov. 27–29, 2020
- ▶ Antlerless Portion (open areas only):
Dec. 4–6, 2020
- ▶ Alternative Methods Portion:
Dec. 26, 2020–Jan. 5, 2021

Dove

Sept. 1–Nov. 29, 2020

Elk

Firearms:

Dec. 12–20, 2020

New Elk Hunting Season

MDC will offer Missourians the state's first elk-hunting season in modern history starting this fall. Learn more at short.mdc.mo.gov/Znd.

Groundhog (woodchuck)

May 11–Dec. 15, 2020

Other Furbearers

Nov. 15, 2020–Jan. 31, 2021

Pheasant

Regular:

Nov. 1, 2020–Jan. 15, 2021

Quail

Regular:

Nov. 1, 2020–Jan. 15, 2021

Rabbit

Oct. 1, 2020–Feb. 15, 2021

Sora, Virginia Rails

Sept. 1–Nov. 9, 2020

Squirrel

May 23, 2020–Feb. 15, 2021

Turkey

Archery:

Sept. 15–Nov. 13, 2020

Nov. 25, 2020–Jan. 15, 2021

Waterfowl

See the Migratory Bird and Waterfowl Hunting Digest or visit short.mdc.mo.gov/ZZx for more information.

Wilson's (Common) Snipe

Sept. 1–Dec. 16, 2020

Woodcock

Oct. 15–Nov. 28, 2020

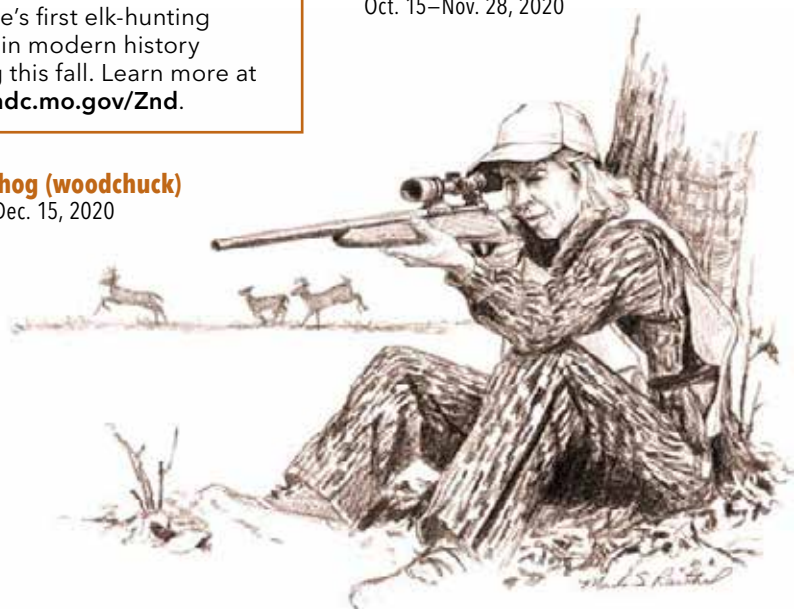


ILLUSTRATION: MARK RATHIEL



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on Instagram**

@moconservation

American goldfinches, like this little puddle jumper, delight backyard birdwatchers all winter. To attract them to your yard throughout the season, stock your feeders with their favorites — sunflower and niger seeds. Many birds winter in Missouri, so grab a birding guide and some binoculars and see what you'll discover right outside your window. For more information about backyard feeding, visit short.mdc.mo.gov/Z28.

📷 by **Noppadol Paothong**